

ABSTRACT

A composition for an anti-reflective coating or a radiation absorbing coating which can form an anti-reflective coating or a radiation absorbing coating having high absorption to exposed radiation in the range of 100 to 450 nm, no diffusion of photo-generated acid to anti-reflective coating and so on, no intermixing of resist and anti-reflective coating layer, good shelf-life stability, and good step coverage and novel compounds and polymers being preferably used in the composition are disclosed. The composition contains an acrylic or methacrylic compound or polymer with an isocyanate or thioisocyanate group bonded through an alkylene group to a side chain thereof or with an amino or hydroxyl group-containing organic chromophore which absorbs radiation in the range of 100 to 450 nm wavelength and is bonded, for example, through an alkylene group to the isocyanate or thioisocyanate group. Resist patterns with high resolution are formed on a substrate. A composition for an anti-reflective coating or a radiation absorbing coating are applied on the substrate and baked to form an anti-reflective coating or a radiation absorbing coating layer. Then, a chemically amplified resist is coated thereon and after patternwise exposure, developed. During baking of the anti-reflective coating or radiation absorbing coating, hardening or curing of the coating takes place by the presence of the isocyanate or thioisocyanate group. On the other hand, the exposed radiation having wavelength in the range of 100 to 450 nm is absorbed by organic chromophore.

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